

## REMARKS

Applicant respectfully requests reconsideration of the present application in view of these comments.

### **I. Status of Claims**

Claims 1-6, 8, 9, and 16-22 are pending and subject to examination on the merits, with claims 7 and 10-15 withdrawn.

### **II. Claims Rejections – 35 U.S.C. § 103**

Claims 1-6, 8-9 and 16-21 stand rejected as allegedly obvious under 35 U.S.C. § 103 over Marshall *et al.*, U.S. Patent No. 4,678,673, and further in view of Jiménez *et al.*, PROCEEDINGS OF THE 9<sup>TH</sup> INTERNATIONAL LUPIN CONFERENCE (June 2009) and Olmos-Dichara *et al.*, BIOTECHNOLOGY LETTERS, 19:8(709-14) (August 1997). According to the Examiner, "it would have been obvious to one of ordinary skill in the art having Marshall, Jimenez, Olmos-Dichara to substitute the soybean in Marshall for the lupine in Jiménez because Jimenez discloses that lupin seeds have a protein and oil contents that compare favorably with soybean and that lupin seeds can be successfully fermented." (Office Action at pg. 3). Applicant respectfully traverses this ground of rejection.

Marshall in view of Jiménez and Olmos-Dichara do not render obvious the claimed invention because one of ordinary skill in the art would not have found it obvious to substitute lupine for soybean, as discussed below.

One of ordinary skill in the art would not consider protein and oil content to be the essential consideration in production of lactic acid. Rather, the amount and nature of sugars present is also an important consideration. This is clear from Marshall.

Marshall's fermented samples, which are show in Table III, include a small amount of lactic acid, but this acid cannot be a product of the fermentation of these samples. This is so because soy does not contain lactose. Rather, soy contains mainly saccharose, raffinose, stachyose, and glucose. Accordingly, Marshall posited that the detected lactic acid in the



dried, fermented, full-fat soy, "may not be derived from soy sugar breakdown, but possibly from endogenous substrate utilization by the cells, after transfer to the soy medium" (Marshall at col. 8, ll. 34-48). Thus, it is not correct to state that "Marshall cites that diacetyl, ACM, including lactic acid, are compounds producing the buttery, milk-like flavors in milk products, *which are produced by the fermentation of the oilseeds*" Office Action at pg. 2 (emphasis supplied). The lactic acid could not be the result of fermentation, as Marshall itself recognized. It was the fermentation of soy with a microorganism which, when grown for multiplication on a substrate, must have incorporated some other sugar from which the microorganism was able to produce lactic acid, or must have maintained some lactic acid as a metabolic product thereof, and released it only after contact with the soy.

The Office Action cites Jiménez to show that lupine milk can be fermented, resulting in a 0.87% content of lactic acid. However, *Lupinus campestris* seed naturally contains a number of alkaloids, and these alkaloids must be debittered by an alkaline treatment. This treatment also removes more than 90% of the oligosaccharides (see abstract) and reduces the monosaccharide content from about 5g/100g to about 1g/100g after six hours treatment with water or alkaline treatment. (See Jiménez table II) Therefore, Jiménez fortified its lupine milk with 3% sucrose and 1.5% lactose (Jiménez at page 444, "Production of Lupine Milk"). Jiménez, at best, contends that lupine seed is a good alternative to soy in order to obtain *yogurt-like products*. Yet Jiménez is silent about any hint with respect to the question whether it might be possible to produce lactic acid from lupine seed without added sugars. In fact, Jiménez teaches away from the claimed invention by teaching a low sugar content.

Olmos-Dichara, which relates to production of lactic acid (95% L-lactic acid) by a specific *Lactobacillus casei*, also does not render obvious the claimed invention, either alone or in combination with the other references. Olmos-Dichara investigated the growth and lactic acid production by the specific *Lactobacilli* on artificial media that contained large amounts of glucose (Olmos-Dichara at pg. 710, last col., first ¶ under "materials and methods, strain and media"). On such media, glucose is a substrate for the production of lactic acid by the microorganism. Thus, one of ordinary skill in the art would not arrive at the claimed invention based on Olmos-Dichara alone or in combination with the other references.



In summary, the disclosure of fermenting an arbitrarily selected, proteinaceous starting material using lactic acid producing bacteria would not allow one of skill in the art to arrive at the claimed invention. The proteinaceous starting material must contain specific sugars, which can be used by lactic acid producing bacteria as the source for lactic acid. As is evident from Marshall, soy is not suitable in this respect. Armed with Marshall, one of ordinary skill in the art would not be motivated to substitute the soy used by Marshall with lupine seed in order to arrive at the present invention. Jimenez emphasizes this point by disclosing that lupine seed may have a high lipid content as well and, therefore, favorably compares with soybean, as outlined in the introduction of this document. Thus, one of ordinary skill in the art would come to the conclusion that fermentation of lupine seed with the respective bacteria will not result in a lactic acid product because the small amount of lactic acid in the products of Marshall are not a result of the fermentation of soy. Rather, the lactic acid was derived from endogenous substrate utilization by the cells after transfer to the soy medium. Knowing about the preferred L-lactic acid production by *lactobacilli*, as taught by Olmos-Dichara, does nothing to remedy the deficiencies in the other references.

For at least these reasons, Applicant respectfully requests reconsideration and withdrawal of this ground of rejection.



### CONCLUSION

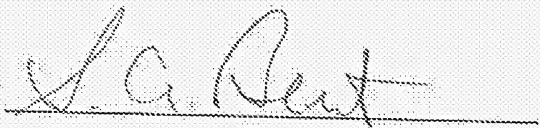
Applicant believes that the present application is in condition for allowance. Favorable reconsideration is requested, therefore. Also, Examiner Ling is invited to contact the undersigned directly, should any issue warrant further consideration.

The Commissioner is hereby authorized to charge any additional fees, which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, and to credit any overpayment to Deposit Account No. 19-0741. Should no proper payment accompany the response, then the Commissioner is authorized to charge the unpaid amount to the same deposit account. If any extensions of time are needed for timely acceptance of submitted papers, Applicant hereby petitions for such extension under 37 C.F.R. § 1.136 and authorizes payment of any such extensions fees from the deposit account.

Respectfully submitted,

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By



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